

the motor/non-motor segment closures on Hells Canyon vary by season, Grand Canyon has a “no motors” season, and segments of the North Fork Virgin in Zion National Park are closed to whitewater boating and tubing during parts of the year.

### **Separating uses by flow**

Separating uses by flow level is way of separating uses by time, allowing natural flow regimes to dictate boatable times. Two rivers where variations of this concept have been used include the North Fork of the Virgin River in Zion National Park (whitewater boaters are allowed to boat the river by permit during high flow periods of the year) and a segment of the Rio Grande near Albuquerque NM (commercial use is allowed on this segment only during higher flows).

As discussed in Chapter 7, the conflict between boaters and anglers is probably only relevant on the Upper Chattooga in the two “overlap ranges,” and separation by flow thresholds offers one way that high quality opportunities for both groups might be addressed.

There are challenges to a flow-based separation, beginning with the lack of a real-time gage at Burrells Ford. In addition, the river’s “flashy” hydrology means that “boating/no boating” decisions will sometimes be “wrong” in hindsight. It is also challenging to “split” overlap ranges. For example, for the “low flow overlap” (which provides optimal fishing and lower quality technical boating), the options appear to be:

- Prohibit boating on these days.
- Determine the flow splits the 77 days in overlap period; boating could be allowed above that flow.
- Choose the middle flow in the range (288 cfs at Burrells Ford); boating would be allowed above that flow.
- Allowing boating all days in this range.

### **Enforcing and administering zoning or use limits**

Stakeholder discussion has offered differing opinions about whether spatial/temporal boating closures or use limits (if boating were allowed) could be enforced given current Forest Service staffing. Enforcement can be challenging, and more complex boating regulations (e.g., flow, segment, and timing components) would certainly be more difficult for boaters, anglers, other users to know what is legal (which would probably complicate the ability to prosecute violators).

On-the-ground enforcement of more complex boating (or other use) regulations might also be challenging (if boating were allowed). With the current boating closure, rangers focus their enforcement efforts on easily identifiable days with higher boatable flows. If they observe a boater on the restricted reaches, citing the violator is straightforward.

If more complex boating regulations were in place, enforcement efforts would conceivably have to occur on a larger number of days, and determining whether a boater was “legal” under the rules would require greater sophistication. We believe that the amount of time “on-the-ground” for such law enforcement efforts is likely to be similar (boating is still only likely to occur on the relatively few days that flows are boatable), so the real increase in effort is likely to be related to permit system administration (if one is developed) and efforts to educate users on how to use it. This is discussed briefly under “administering a permit system,” but the details of such efforts are not trivial.

Finally, user compliance with use limits or zoning closures is unlikely to be total, so impact estimation (e.g., encounters, interference incidents, competition) should take this into account. Whether intentional or not, some users are likely to exceed group size regulations, fail to obtain permits (if necessary), use lower than prescribed flows (if those are used in a zoning option), and so forth. Educational efforts and active law enforcement may go a long way to minimizing non-compliance, but these can be costly. In most low-to-moderate density settings, "norm enforcement" by other users is critical for determining the success of a management program such as use limits or zoning.

**Table 5. Impact – Action Matrix I: Development, education and regulation actions.**

<div>Legend</div> <div>++ Reduces impact</div> <div>+ Slightly / potentially reduces impact</div> <div>— May increase impact</div> <div>□ No effect</div>	Development / improvements						Education			Regulation			
	Trail redesign / maintenance	Camp rehab / reorganization	Wildlife openings	Backcountry pit toilets	Develop more single camps	Clean-up patrols	Disperse use via information	Etiquette education	“Leave no trace” education	Fire regulations	Human waste regulations	Wildlife issue regulations	Fishing regulations
Biophysical Impacts													
Trail erosion	++	+							+				
Litter on trails				+		++			+		+		
Camp impacts		++		+	+	++			+	+	++		
Wildlife impacts			++		—				+			+	
Bank trampling	+								+				
Woody material impacts									+				
SAR impacts													
Social Impacts													
Trail encounters					—		+						
On-river encounters							+						
Angler-boater encounters							+						+
Boater-boater encounters							+						
Large group encounters		+					+						
Interference with angling							+	+					+
Fishing competition							+						+
Camp encounters		+			+		+	+					
Camp competition					++		+						
Parking lot congestion					—		+						

Note: Impacts are not necessarily of equal importance and symbols do not necessarily connote equal effects.

**Table 6. Impact – Action Matrix II: Use limits and conflict actions.**

<b>Legend</b> ++ Reduces impact + Slightly / potentially reduces impact – May increase impact □ No effect	Use limits							Conflict actions						
	Limit boating	Limit day hikers	Limit anglers	Limit overnight use	Frontcountry parking limits	Group size limits	Registration – no limits	No boating by season	No boating by flow	No boating segment	No boating time of day	Education – sharing	No boating recommendations	No boating – entire river
<b>Biophysical Impacts</b>														
Trail erosion														
Litter on trails														
Camp impacts				+		+								
Wildlife impacts								+						
Bank trampling			+											
Woody material impacts														+
SAR impacts									+					
<b>Social Impacts</b>														
Trail encounters		++		++	++									
On-river encounters	++		++	++	++			++	++	++	++	+	+	++
Angler-boater encounters	++		++					++	++	++	++	+	+	++
Boater-boater encounters	++													
Large group encounters						++								
Interference with angling	++							++	++	++	++	+	+	++
Fishing competition			++		++									
Camp encounters				++										
Camp competition				++										
Parking lot congestion	+				++			+						

Note: Impacts are not necessarily of equal importance and symbols do not necessarily connote equal effects.

## Management action considerations

Management actions can be used to reduce capacity and conflict impacts. Taken together with information from preceding chapters, the present analysis suggests several ways that management can help provide high quality recreation opportunities on the Upper Chattooga.

- For current uses, different segments provide different recreation opportunities at different times of the year. There are different densities, types of users, and levels of impacts associated with these opportunities, and users seem to have developed related tolerance levels, at least for the social impacts (we have no data about evalus of biophysical impacts).
- Adding boating to this mix would have some impacts on current users. The extent of these impacts depends upon the number of boaters and the times of year when boating occurs.
- Legislated goals for the river are to provide high quality (“outstandingly remarkable”) recreation opportunities and maintain biophysical health. But any use causes some impact, and there is a natural tension between allowing use and the consequences (impacts) of that use. Good management limits use and impacts to acceptable levels.
- In choosing where to “draw the line” for impacts and designing actions to meet those standards, there are often trade-offs. In some cases, solutions can provide multiple opportunities which “fit together.” In other cases, providing one opportunity creates adverse impacts on other opportunities or resources.
- In general, information about capacity and conflict issues on the Upper Chattooga suggests it is possible to develop alternatives which provide different mixes of multiple recreation opportunities. Existing data does not clearly indicate the “right” mix of different opportunities, so decisions about which ones to provide are not a “technical” task. However, identifying a reasonable range of such alternatives and analyzing their effects will require “honest conversations” about impacts and trade-offs. Information in this report is intended to clarify these trade-offs for decision makers, stakeholders, and the public to consider in the remainder of the LAC / NEPA process.

## 9. Proceeding with Planning and Decision-making

*This final chapter briefly reviews additional information options for capacity or conflict decisions on the Upper Chattooga, and ways to integrate them into planning and decision-making.*

### Introduction

The present report has summarized and integrated existing information from many sources to provide a comprehensive overview of capacity and conflict issues on the Upper Chattooga. It is possible to collect more (or more precise) information about some topics. The following reviews information options, challenges in collecting or using the information, and the need for additional effort compared to the costs and benefits. It includes: (1) use information; (2) flow-recreation information; and (3) user survey information.

### Use information

Use data for the Upper Chattooga remains sparse. Estimates of current use rely heavily on professional judgments from agency staff, and estimates for potential future boating use (if allowed) are even more challenging (see Chapter 4). The recently-initiated “spot count” data collection will continue through August 2007, resulting in better estimates for spring and summer periods, but this cost-effective program has some limitations (see discussion in Chapter 4). More extensive efforts could be developed (including more elaborate on-site counting or mandatory registration programs), but they can be expensive, take at least an additional year, or have a relatively heavy “managerial footprint.”

Information summarized in this report is sufficient for understanding the overall use situation, but it is not detailed enough to develop precise relationships with specific impacts (e.g., “if there are X groups in Ellicott Rock reach, average daily encounters will be Y”). These relationships would help refine use limits if a permit system is used to control impacts such as trail or river encounters, but reasonable assumptions (based on information from other rivers) are sufficient to develop alternatives in the NEPA process. If a permit system is established, through planning, it would provide information to adjust limits through monitoring and “adaptive management.” Similarly, if a user survey is conducted (see below), concurrent use data collection could help link use with reported impacts.

Improved use estimates for boating probably require actual boating; this is only an issue if boating is actually allowed. As discussed in Chapter 4, publicity and latent demand are likely to artificially increase boating use for at least a year (if boating were allowed), so even a one-year assessment may not depict “natural” use over the long run. Waiting for more precise data adds a “time cost” to decision-making; we believe it makes more sense to develop alternatives based on current estimates, with built-in monitoring and adaptive management features that allow “adjustments” when more precise information becomes available.

### Flow information

Existing information for flow-dependent activities on the Upper Chattooga is relatively precise for a river with a “new” gage and formal assessment of just one flow. However, there may be opportunities to 1) improve hydrology relationships between Burrells Ford and Highway 76 gages as the period of record for Burrells Ford expands; 2) develop more precise boating flow ranges (if

boating is allowed); and 3) develop more precise angling flow ranges as anglers calibrate to the Burrells Ford gage. This information is important if management actions designed to reduce potential conflicts between boaters and other groups include a flow threshold component (see Chapter 8). But it may require time, a systematic effort, and the allowance of boating (potentially on a “trial basis”). We believe existing information is sufficient to develop alternatives that include such thresholds, and additional flow-recreation work is unlikely to substantially change the concepts underlying those alternatives. Given that adjustments can be made based on monitoring, available information is sufficient to develop flow thresholds during NEPA planning.

## User survey

User surveys provide important data in most capacity analyses, particularly for social impacts. A few studies provided survey information from Upper Chattooga users (e.g., Ellicott Rock users and Burrells Ford campers), but they were not recent, did not ask about some social impact standards, or support for capacity and conflict management actions. While information about these topics would be helpful for developing alternatives for the Upper Chattooga, a major survey effort has challenges for this particular river:

- Unless boaters are allowed to use the river, it would be difficult to measure impacts from boaters and tolerances for such impacts (existing users would be speculating about how boaters affect them).
- Unless boaters are allowed to use the river, it is difficult to develop a sample of upper river boaters to learn their tolerances and management preferences.
- Developing representative samples of all groups is challenging, especially given the publicity and contention surrounding the boating issue.
- There are substantial time and effort costs to conducting a survey. Given OMB requirements regarding survey review, a survey is likely to delay a NEPA process and a decision for at least one year.

Additional information about users and their preferences is always helpful, but it is probably not necessary in order to consider standards and management actions in a NEPA planning process. Existing information about important impacts, tolerances, and support for management actions is sufficient to develop reasonable alternatives and allow stakeholder/public comment on them. For example, more precise information about average tolerances for trail encounters among hikers is unlikely to change stakeholder/public opinion about the concept of establishing encounter standards or using them to trigger a use limit system. There is sufficient information to develop management strategies, and adjustments to standards can be based on monitoring.

## Conclusion

Taken together, we believe available information is sufficient to proceed with NEPA planning about capacity and conflict issues on the Upper Chattooga. Additional monitoring of biophysical and social impacts will be necessary in the future, but the additional precision provided by such efforts is unlikely to redefine what is already known. For the Upper Chattooga, the difficult decisions focus on (1) the opportunities to be provided, and (2) what kinds of limits or restrictions should be used to protect the quality of those opportunities. Existing information summarized in this report can be used to develop management alternatives that represent a reasonable range of opportunities, impacts, standards, and actions. This allows NEPA planning to move forward with detailed adjustments based on monitoring and adaptive management.

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